

**REMARKS**

I. **STATUS OF THE CLAIMS AND THE REJECTIONS**

Claims 1–10 and 12–15 are pending in the application. Claims 9 and 14 have been amended. Claim 13 has been cancelled. Amended claims 9 and 14 comply with Section 112.

In the Office Action, claims 1–10 and 12–15 were rejected for the reasons described below.

Claim 9 was rejected under 35 U.S.C. § 112, second paragraph. The Office Action states that the term "conventional" renders claim 9 indefinite.

Claims 1–8, 13, and 14 were rejected under 35 U.S.C. § 103(a) for being unpatentable over a section of the Petroleum Products Handbook, pages 4–8 to 4–37 ("Petroleum Products Handbook").

Claims 10, 12, and 15 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form.

Applicant respectfully traverses the rejections. Nonetheless, claim 9 has been amended to render moot the above-described Section 112 rejection. More specifically, applicant has amended independent claim 9 to remove the recitation of "conventional." Amended claim 9 should now be allowable. Accordingly, applicant respectfully requests withdrawal of the Section 112 rejection. Claim 13 has been cancelled rendering the rejection of this claim moot. Claim 14 has been amended to depend from claim 9 and to recite using the fuel oil. Amended claim 14 is not a product-by-process claim. The amendment of claim 14 renders the previous rejection over the

Petroleum Products Handbook and case law moot. Applicant respectfully requests reconsideration of the Section 103 rejection.

II. Rejections under 35 U.S.C. § 103(a)

Claims 1–8 and 14 are patentable over the Petroleum Products Handbook.

The Office Action rejects applicant's previous arguments regarding claims 1-8, asserting that fuel oils, such as, gasoline, diesel oil, kerosene, heavy oil, or bio-diesel, contain *molecules* that are less than 10 nm in size and that applicant has not shown that all fuel oils form *granules* larger than 3 nm. *See* Office Action at pages 4 and 5. Presumably, the unstated reasoning is that there is probably at least one fuel oil that inherently "contains substantially no granules greater than 10 nm" according to claim 1.

Applicant disagrees. More importantly, this is not the proper standard for making an obviousness rejection. The proper standard was set forth in *Graham v. John Deere Co.*, 148 USPQ 459 (1966). According to the *Graham* standard, a proper rejection must be based on the facts of record. *See* MPEP § 2141. In this application, there are no facts in the record demonstrating that the gasoline described in the Petroleum Products Handbook contains substantially no *granules* greater than 10 nm. The Petroleum Products Handbook does not even suggest that the fuels form *granules*. The Office Action relies on calculated *molecular* lengths in rejecting the recited *granule* range. The length of a molecule and the size of a granule, however, are not the same. The Office Action is silent with regard to a reason that would lead one of ordinary skill to believe that there is a relationship between the two. As set forth in the present application, "[t]he molecules of various conventional fuel oils exist in [the] form of molecule clusters. Each

molecule cluster consists of several dozens to hundred[s] [of] thousands [of] molecules, forming granules of several dozens to hundreds [of] nanometers in diameter." See page 1, ¶2. There is no evidence in the record that generally describes the molecular granules of fuel oil or much less describes their size in the claimed range and that refutes the statement in applicant's specification. Because the rejection is not supported by facts sufficient for one of ordinary skill in the art to necessarily conclude that even one of the fuels disclosed in the Petroleum Products Handbook contains "substantially no granules greater than 10 nm" as recited in claim 1, no *prima facie* case of obviousness has been established. Absent a *prima facie* case of obviousness, applicant is not under a burden of proving that all gasoline, diesel oil, kerosene, heavy oil, and bio-diesel would have granules larger than 3 nm as is suggested in the Office Action. For this reason, applicant respectfully requests withdrawal of the rejection.

Additionally, each of dependent claims 2-8 includes one or more features in combination with the feature of independent claim 1. For substantially the same reasons set forth above with respect to claim 1, and because the Petroleum Products Handbook does not teach, suggest, or render obvious the combination of features recited in any of the dependent claims, applicant respectfully requests that this rejection based on the Petroleum Products Handbook be withdrawn.

In the rejection of claim 14, the Office Action states that "fuel oils such as gasoline that pass through a magnetic field would exit with the same properties since hydrocarbon fuels such as gasoline is [*sic*] nonpolar and there is no reason to believe that they would be affected by a magnetic field." See Office Action at page 3. In other

words, according to the rejection, the fuel oil recited in claim 14 is similar to that disclosed in the prior art.

Applicant asserts that using the fuel oil recited in amended claim 14 is not disclosed or suggested by the Petroleum Products Handbook. As described in the specification at Example 6 on page 11, using the fuel oil resulted in a rate of fuel saving of at least 30.4%. It is also applicant's position that the statements regarding the effect of the magnetic field on the fuel oil are contrary to the evidence of record. According to at least the application and the Declarations of record, one of ordinary skill in the art could only conclude that the fuel oil would be affected by a magnetic field and that the fuel oil would exit the claimed process with different properties. See for example, Fig. 3, which shows that untreated fuel oil samples contains granules of sizes larger than 300 nm and that treated fuel oil contains granules of sizes smaller than 3 nm. This is clearly described on pages 8 and 9 of the present application. In addition, the Declaration of Yuwen Huang, submitted August 10, 2009 at ¶17, is evidence that the claimed treatment method reduced the molecular cluster size from the untreated fuel oil sample. Overall, there is ample evidence in the record that fuel oil is affected by the magnetic field, such that using the fuel after passing the fuel oil through the magnetic field is patentable. For this reason, applicant respectfully requests reconsideration of amended claim 14.

III. Conclusion

Based on these remarks, Applicant respectfully asserts that this case is in condition for allowance and respectfully requests entry of the claim amendments and allowance of the pending claims.

Applicant respectfully asserts that no additional fee is due. If any charges or credits are necessary to complete this communication, please apply them to Deposit Account No. 23-3000.

Respectfully submitted,  
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